



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,131	01/11/2002	Daniel R. Franzen	22-0193	8145
30050	7590	06/24/2004	EXAMINER	
PATENT COUNSEL, TRW INC. S & E LAW DEPT. ONE SPACE PARK, BLDG. E2/6051 REDONDO BEACH, CA 90278			DEAN, RAYMOND S	
		ART UNIT	PAPER NUMBER	
		2684		

DATE MAILED: 06/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/044,131	FRANZEN ET AL.
	Examiner	Art Unit
	Raymond S Dean	2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1 - 17 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1 - 17 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>4</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1 are rejected under 35 U.S.C. 102(a) as being anticipated by Sarraf et al. (US 6,175,719).

Regarding Claim 1, Sarraf teaches a multi-beam satellite comprising: an input section to receive a plurality of first spot beams; an output section to transmit a plurality of second spot beams (Figure 1, Figure 2); and a payload architecture coupled between said input section and said output section (Figure 2), said payload architecture flexibly and selectively switching and filtering signals from said plurality of first spot beams received by said input section and routing the switched and filtered signals to said output section to be transmitted as said plurality of second spot beams (Column 3 lines 6 – 56).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 2684

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf et al. (US 6,175,719) in view of Avitzour et al. (US 2002/0032003).

Regarding Claim 2, Sarraf teaches all of the claimed limitations recited in Claim

1. Sarraf further teaches wherein said payload architecture switches to select one of said plurality of first spot beams received by said input section (Column 3 lines 6 – 56).

Sarraf does not teach first spot beams that contain a gateway.

Avitzour teaches first spot beams that contain a gateway (Figure 1, the HUB is the gateway).

Sarraf and Avitzour both teach a multiple spot beam satellite system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the gateway taught in Avitzour in the satellite system of Sarraf for the purpose of establishing an outbound channels path to the end user terminals.

Regarding Claim 3, Sarraf in view of Avitzour teaches all of the claimed limitations recited in Claim 2. Avitzour further teaches primary beams and secondary beams (Section 0037 lines 1 – 6, the beams A – D are the primary beams and the generic beams G1 – Gn are the secondary beams).

Regarding Claim 4, Sarraf in view of Avitzour teaches all of the claimed limitations recited in Claim 3. Avitzour further teaches a primary beam contains a gateway (Section 0044 lines 1 – 4, since the hub establishes the outbound channels path said hub will be contained in the primary beam).

Regarding Claim 5, Sarraf in view of Avitzour teaches all of the claimed limitations recited in Claim 2. Sarraf further teaches wherein said payload architecture allocates return channels among said plurality of first spot beams by switching and filtering of said plurality of first spot beams (Column 3 lines 6 – 56).

Regarding Claim 6, Sarraf in view of Avitzour teaches all of the claimed limitations recited in Claim 4. Sarraf further teaches wherein said payload architecture selects combined returned signals from among said one of said plurality of first spot beams selected to contain a gateway by power dividing and switching said plurality of first spot beams (Column 3 lines 26 – 39, the DSPR distributes the signals that are to be transmitted on the downlink thus there is an inherent power dividing such that said signals can be distributed).

5. Claims 7 – 11 and 14 - 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf et al. (US 6,175,719) in view of Norin (US 6,233,433 B1).

Regarding Claim 7, Sarraf teaches a multi-beam satellite comprising: an input section to receive a plurality of first spot beams; an output section to transmit a plurality of second spot beams (Figure 1, Figure 2); and a payload architecture coupled between said input section and said output section (Figure 2), said payload architecture flexibly and selectively switching and filtering said plurality of first spot beams received at said input section and routing the switched and filtered to be said plurality of second spot beams transmitted by said output section (Column 3 lines 6 – 56).

Sarraf does not teach performing testing of each of said plurality of first spot beams and each of said plurality of second spot beams.

Norin teaches performing testing of each of said plurality of first spot beams and each of said plurality of second spot beams (Figure 4, Column 4 lines 14 – 65).

Sarraf and Norin both teach a multiple beam satellite system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the testing method taught in Norin in the satellite system of Sarraf for the purpose of verifying the operation of the satellite subsystems.

Regarding Claim 9, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 7. Norin further teaches wherein said testing is performed using test signals from a single ground station (Column 5 lines 11 - 14).

Regarding Claim 10, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 7. Norin further teaches wherein said payload architecture allows connectivity, for test purposes only, of one of said plurality of second spot beams corresponding to a cell with one of said plurality of first spot beams corresponding to said cell (Figure 4, Column 4 lines 14 – 65).

Regarding Claim 11, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 9. Norin further teaches wherein said testing operates in conjunction with a control system to reposition said at least one first antenna and said at least one second antenna so that each one of said plurality of first spot beams and said plurality of second spot beams can be tested from said single ground station (Column 4 lines 27 – 30).

Regarding Claim 14, Sarraf teaches receiving a plurality of first spot beams at said satellite; transmitting a plurality of second spot beams from said satellite; switching said plurality of first spot beams to allow connectivity of a first spot beam in a cell with a second spot beam in said cell (Figure 1, Figure 2, Column 3 lines 6 – 56).

Sarraf does not teach a method of testing a multi-beam satellite, said method comprising sending a test signal from a single ground station on said first spot beam and said second spot beam to test said first spot beam and said second spot beam.

Norin teaches a method of testing a multi-beam satellite, said method comprising sending a test signal from a single ground station on said first spot beam and said second spot beam to test said first spot beam and said second spot beam (Figure 4, Column 4 lines 14 – 65).

Sarraf and Norin both teach a multiple beam satellite system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the testing method taught in Norin in the satellite system of Sarraf for the purpose of verifying the operation of the satellite subsystems.

Regarding Claim 15, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 14. Norin further teaches repeating said step of sending a test signal for each one of said plurality of first spot beams and each one of said plurality second spot beams from said single ground station (Figure 4, Column 4 lines 14 – 65).

Regarding Claim 16, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 15. Norin further teaches wherein said satellite comprises a first antenna or antenna set receiving said plurality of first spot beams and a second

antenna or antenna set transmitting said plurality of second spot beams, and said first antenna or antenna set and said second antenna or antenna set are repositioned for each pair of one of said plurality of first spot beams and one of said plurality of second spot beams corresponding to a cell (Column 4 lines 24 – 41).

6. Claims 8, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf et al. (US 6,175,719) in view of Norin (US 6,233,433 B1) as applied to claim 7 above, and further in view of Avitzour et al. (US 2002/0032003).

Regarding Claim 8, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 7. Sarraf further teaches wherein said payload architecture selectively switches said plurality of first spot beams (Column 3 lines 6 – 56).

Sarraf in view of Norin does not teach allowing any uplink beam to act as a gateway beam.

Avitzour teaches allowing an uplink beam to act as a gateway beam (Figure 1, Hub is the gateway).

Sarraf in view of Norin and Avitzour teach a multiple spot beam satellite system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the gateway taught in Avitzour in the satellite system of Sarraf in view of Norin for the purpose of establishing an outbound channels path to the end user terminals.

Regarding Claim 12, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 7. Sarraf in view of Norin does not teach spot beams corresponding to primary cells and secondary cells.

Avitzour teaches spot beams corresponding to primary cells and secondary cells (Section 0037 lines 1 – 6, the beams A – D correspond to the primary cells and the generic beams G1 – Gn correspond to the secondary cells).

Sarraf in view of Norin and Avitzour teach a multiple spot beam satellite system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the primary and secondary cells taught in Avitzour in the satellite system of Sarraf in view of Norin for the purpose of enabling the satellite to direct one or more of a plurality of beams to one or more relatively confined geographic areas or to a broader area thus creating a flexible payload architecture.

Regarding Claim 13, Sarraf in view of Norin and in further view of Avitzour teaches all of the claimed limitations recited in Claim 12. Avitzour further teaches first spot beams corresponding to a secondary cell (Section 0037 lines 1 – 6, the beams A – D correspond to the primary cells and the generic beams G1 – Gn correspond to the secondary cells).

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf et al. (US 6,175,719) in view of Norin (US 6,233,433 B1) as applied to claim 15 above, and further in view of Dolmeta et al. (US 6,288,673)

Regarding Claim 17, Sarraf in view of Norin teaches all of the claimed limitations recited in Claim 15. Sarraf further teaches one or more antennas receiving said plurality of first spot beams and said plurality of second spot beams (Figure 2) Norin further teaches said antenna is repositioned for each pair of one of said plurality of first spot beams and one of said plurality of second spot beams corresponding to a cell (Column 4 lines 24 – 41).

Sarraf in view of Norin does not teach shared antenna apertures.

Dolmeta teaches shared antenna apertures (Column 2 lines 40 - 44, antenna arrays comprise shared apertures).

Sarraf in view of Norin and Dolmeta teach a multiple beam satellite system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the shared antenna apertures taught in Dolmeta in the satellite system of Sarraf in view of Norin for the purpose of preserving optimal transmission and/or reception performance with a minimum increase in mass and bulk.

### ***Conclusion***

8. Any inquiry concerning this communication should be directed to Raymond S. Dean at telephone number (703) 305-8998.  
If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung, can be reached at (703) 308-7745. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Application/Control Number: 10/044,131  
Art Unit: 2684

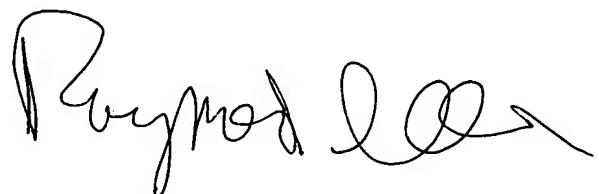
Page 10

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology center 2600 only)

Hand – delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377



Nay Maung  
NAY MAUNG  
SUPERVISORY PATENT EXAMINER